Chlamydia

Definition: A sexually transmitted disease caused by the bacterium *Chlamydia trachomatis*. Approximately 70% of infected women have few or no symptoms; symptoms are often mild or absent in men. If symptoms occur, men and women may have abnormal genital discharge or pain during urination in the early stages. Women may also experience abdominal pain.
ICD-9 code 099.5

Summary

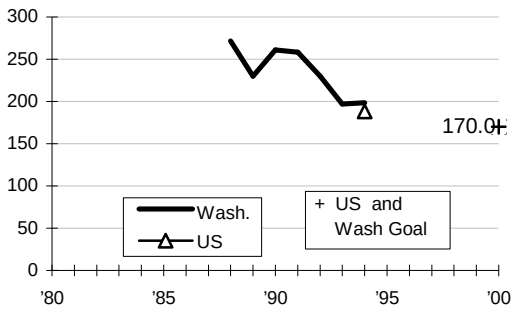
Chlamydia is the most commonly reported sexually transmitted disease (STD) in Washington. In 1994, 10,577 cases (8,458 females and 2,119 males) were reported for a rate of 198/100,000. More complete detection of cases among women, due to screening efforts aimed at women (Region X Chlamydia Project), account for the high female to male ratio (4:1). In women, untreated chlamydia is a major cause of pelvic inflammatory disease (PID) that can lead to infertility or ectopic pregnancies. In 1994, 365 cases of chlamydial PID were reported in Washington. Infected pregnant women can transmit chlamydia to their infants at birth resulting in neonatal eye infections and pneumonia. In 1994, 22 cases of chlamydia infection in infants were reported.

Time Trends

In 1994 chlamydia became a nationally reportable condition, but meaningful national trends are unavailable because screening and prevention programs are just beginning in most areas of the country.

Chlamydia became legally reportable in Washington in July 1987. The Region X (Washington, Alaska, Idaho and Oregon) Chlamydia Project began in January 1988 with selective screening in family planning clinics. The program now includes approximately 100 clinic sites operated by Family Planning/Planned Parenthood, local health departments, and other community clinics. Since 1988, reported chlamydia incidence has declined, even though the number of screening sites has increased.

Chlamydia
Reported Incidence Per 100,000 Persons, with Year 2000 Goals



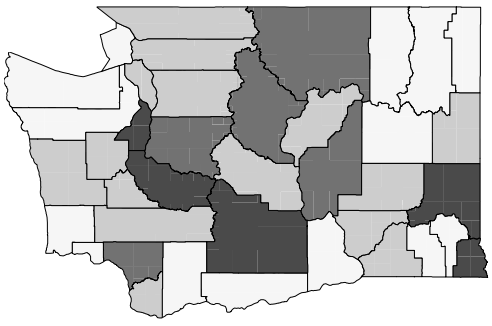
Year 2000 Goal

Washington State's goal for the year 2000 is to reduce the rate of chlamydia incidence to no more than 170/100,000 population. The case rate fell from 272/100,000 in 1988 to 198/100,000 in 1994. The ability of large-scale screening programs to reduce chlamydia prevalence in women has been documented; it will probably require continued screening efforts to meet the year 2000 goal.

Geographic Variation

The average annual incidence rate from 1992 through 1994 was 208/100,000 in Washington. All counties reported at least one case of chlamydia. Since Region X screening sites are located in 34 of 39 Washington counties, it is not surprising that

Chlamydia
Average Annual Incidence, 1992-1994



Cases Per 100,000 Persons
- 39 .4 to 134 .9
- 135 .0 to 208 .3
- 208 .4 to 234 .9
- 235 .0 to 330 .9

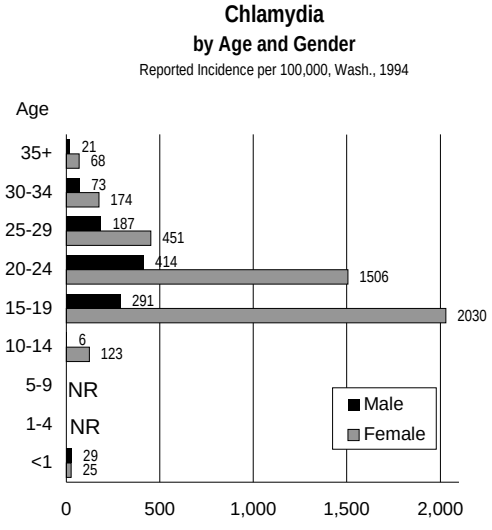
State Average: 208.4
National Rate: 188.4 (1994)

reported morbidity is universally distributed. The highest case rates were in Asotin, Yakima, Pierce, Kitsap, Whitman, King, and Okanogan Counties--a mix of rural and urban counties.

Age and Gender

Of the 10,577 cases reported in 1994, 8,458 (80%) were among females and 2,119 (20%) were among males. The lower chlamydia rates in men reflect, at least in part, lower rates of screening and suggest that many of the sex partners of women with chlamydia have undiagnosed or unreported chlamydia. Also, men diagnosed as having non-gonococcal urethritis often are treated for, but frequently not tested for, chlamydia. A large proportion of these men are likely to be infected with chlamydia.

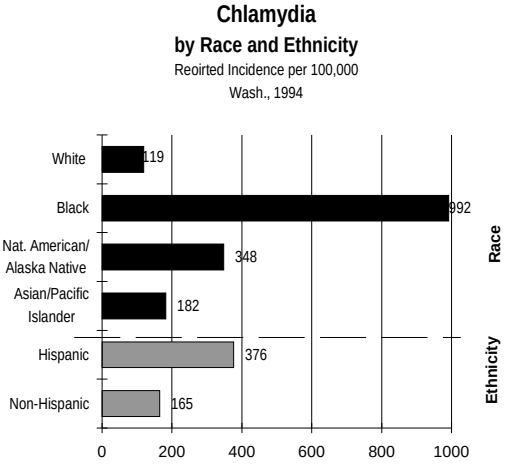
In the US, studies of sexually active females screened during visits to health care providers indicate that age is the sociodemographic factor most strongly associated with chlamydial infection. Prevalence has been highest among sexually active, adolescent females.[1] In Washington, 43% of female chlamydia cases were between 10-19 years of age. The incidence rate for 15-19 year old females was 2,030/100,000 and for males 291/100,000. In the 20-24 age group the incidence rate was 1,506/100,000 for females and 414/100,000 for males.



Race and Ethnicity

Although chlamydia is widely distributed among all racial and ethnic groups, trends in women screened as part of the Region X Chlamydia Project show consistently higher rates among minorities.

Among reported cases in Washington in 1994, Blacks had the highest incidence rates, followed by Native Americans/Alaska Natives, Asian/Pacific Islanders, and Whites. The rate for persons of Hispanic origin was twice that for non-Hispanics.



Other Measures of Impact & Burden

Note: Unless otherwise indicated, the following applies to other STDs such as syphilis and gonorrhea, as well as to chlamydia.

Pelvic Inflammatory Disease. (PID) The inflammation and scarring of the female reproductive organs is the most serious and common complication of STDs among women. Many different organisms can cause PID, but most cases are associated with gonorrhea and chlamydia infections. PID can be acute (short-term) or chronic (long-lasting). If not adequately treated, 10%-40% of women infected with gonorrhea and 20%-40% of women infected with chlamydia will develop PID. Among women with PID, scarring sequelae will cause involuntary infertility in 20%, ectopic pregnancy in 9%, and chronic pelvic pain in 18%.[2] Ninety percent of women who are hospitalized with chronic pelvic pain undergo surgery. Numbers of hospitalized PID patients have declined steadily throughout the 1980s and early 1990s, but this may reflect a general trend toward more outpatient care rather than a decline in disease incidence or severity.[3]

Ectopic Pregnancy. Beginning in 1990, hospitalizations for ectopic pregnancies began to decline. Data from outpatient care surveys, however, suggest that nearly half of all ectopic preg-

nancies are currently treated on an outpatient basis. The total number of ectopic pregnancies in the US in 1992 was estimated at 108,800 (or 19.7 cases per 1,000 pregnancies), the highest level in more than two decades.[4]

Infertility. The exact percentage of couples whose infertility status is secondary to the consequences of an STD is unknown; estimates range from 15%-30%. An estimated 100,000-150,000 American women are rendered infertile each year because of STD-related pelvic infections.[5]

Risk and Protective Factors

Factors associated with increased risk of acquiring an STD include: young age at first intercourse, multiple sex partners, sex partners who are at risk for STDs, and failure to use barrier contraception such as condoms.

High Risk Groups

Racial and ethnic groups. There are wide discrepancies in STD rates by race/ethnicity; rates among blacks, Native Americans/Alaska Natives , and persons of Hispanic origin are much higher than among whites. Although there are no known biologic reasons to explain why racial or ethnic factors alone should alter STD risk, race and ethnicity often serve as markers that correlate with other more fundamental determinants of health status such as poverty, access to quality care, and health care seeking behavior.[6]

It is important to realize that surveillance data are based on cases of STD reported to state and local health departments. In many areas, reporting from public sources such as STD clinics is more complete than reporting from private sources. Since minority populations may utilize public clinics more than whites, differences in rates between minorities and whites may be biased toward showing higher rates for minorities. However in areas where reporting from private sources is known to be more complete, the differences in rates between minorities and whites persist *(CDC, unpublished data).*[7] Washington's data are believed to be relatively complete.

Adolescents and young adults. Both in Washington and nationwide, the highest rates of STDs are among adolescents and young adults. This may be due to a number of reasons: they may be more likely to have multiple (sequential or concurrent) sex partners rather than a single long-term partner; they may be more likely to engage in unprotected sex; and they may select partners at higher risk.

Adolescent females. Rates of chlamydia are substantially higher among women 15-19 years of age than other age groups. Adolescent women may have a physiologically increased susceptibility to chlamydia due to increased cervical ectopy and lack of immunity.[8] During the past two decades, steadily increasing premarital sexual experience among adolescent women has increased the number at risk. PID occurs more commonly after chlamydial infection among adolescent females than among older women.[9]

Repeaters. Repeaters have had more than one episode of the same STD in a 12-month period. They represent 8% of total chlamydia cases and 9% of total gonorrhea cases. Of the 813 chlamydial repeaters in Washington in 1994, half were teenagers. Of the 247 gonococcal repeaters in 1994, 40% were teens. In a recent study of recurrent chlamydial infection among women in Washington in 1992-93, diagnosis in a hospital or HMO, age less than 20, black race, and co-infection with gonorrhea were significantly associated with persistent or recurrent infection after adjusting for other factors (*CDC, unpublished review).* Repeat infections are one of the risk factors associated with infertility.

Pregnant women. Although pregnant women are not at higher risk of infection with STDs than other women, a mother's infection can seriously affect the baby. When a woman has syphilis during pregnancy she may transmit the infection to the fetus *in utero.* This may result in fetal death or physical and mental developmental disabilities. Transfer of a mother's chlamydial or gonococcal infection to her infant at birth can result in eye infection as well as, in the case of chlamydia, a common form of infant pneumonia.

Intervention Points, Strategies and Effectiveness

HIV and STDs share common risk behaviors, so intervention strategies for one will be effective for both (see HIV/AIDS section). Behavioral changes can reduce the risk of acquiring or transmitting HIV and sexually transmitted diseases. Promotion of such behavioral changes is a critical component in preventing these diseases.[10]

The transmission of HIV appears to be facilitated by ulcerative STDs such as syphilis and

nonulcerative STDs such as gonorrhea and chlamydia.[11] Furthermore, recent studies suggest that HIV infection may affect the course of some STDs.[12] Therefore, the diagnosis and treatment of STDs should be viewed as an HIV prevention strategy as well as an integral step in the clinical work-up of HIV-infected persons.

In 1994 in Washington, 477 cases of dual infection (gonorrhea and chlamydia) were diagnosed. Because chlamydia is common among patients with gonococcal infection, presumptive treatment for chlamydia of patients being treated for gonorrhea is recommended. In 1994, 69% of all patients diagnosed with gonorrhea got appropriate treatment for concomitant chlamydial infection.

Oral contraceptives do not prevent STDs, but condoms do. For this reason, pregnancy prevention and disease prevention must be addressed as separate issues, particularly among women in non-monogamous relationships. Advising sexually active at-risk women to use oral contraceptives and condoms will provide the most protection.

Because as many as 70% of women and 50% of men with chlamydia are asymptomatic, early detection is feasible only through screening. Although attention generally focuses on women, it is important from a public health perspective to screen and treat high-risk men since they are the source of infection in women and on average have more sex partners.[13] Further progress in reducing STDs in Washington will also require a continuation of gonorrhea screening efforts.

In order to control the spread of disease it is important to interview and counsel patients infected with bacterial STDs to assure followup and prophylactic treatment of sexual partners.

In the last several years new single-dose therapies have become available for the treatment of chlamydia and gonorrhea. These drugs eliminate the problem of non-compliance which is particularly high among adolescents and patients with asymptomatic infection. Promotional efforts among health professionals regarding the use of these therapies would probably bring more widespread use and more prevention of disease.

New noninvasive diagnostic tests are being developed, including DNA amplification tests to detect chlamydia in urine specimens, which recently received FDA approval. Evaluations of these new DNA amplification tests have shown that culture, the previously accepted "gold standard," detects as little as two-thirds of the true infections in both men and women.[14] Although these tests will be expensive initially, they may be less costly and more available in the late 1990s.

Data Sources

State morbidity data: Washington Department of Health, Infectious Disease and Reproductive Health, Office of STD Services.

National morbidity data: Centers for Disease Control

For More Information

Washington Department of Health, Infectious Disease and Reproductive Health, Office of STD Services, (360) 753-5810.

Endnotes:

[1] Centers for Disease Control and Prevention. *Recommendations for the prevention and management of chlamydia trachomatis infections,* 1993. MMWR 1993;42(No.RR-12):p 2.

[2] Division of STD Prevention. *Sexually Transmitted Disease Surveillance,1994.* U.S. DHHS, Public Health Service. Atlanta: Centers for Disease Control and Prevention, September 1995, p 2

[3] Division of STD/HIV Prevention. *Annual Report, 1994.* U.S. DHHS, Public Health Service. Atlanta: Centers for Disease Control and Prevention, 1995, p 76.

[4] CDC, STD Surveillance 1994, p 35.

[5] CDC, Annual Report 1994, p 76.

[6] CDC, STD Surveillance 1994, p 43.

[7] Ibid., p 43.

[8] Ibid., p 39.

[9] CDC, Chlamydia trachomatis infections, p 5.

[10] Ibid.

[11] CDC, Annual Report 1994, p 4.

[12] Wald A,Corey L,Handsfield HH,Holmes K. Influence of HIV Infection on Manifestations and Natural History of Other Sexually Transmitted Diseases. *Annu.Rev.Public Health 1993;*14:19-42.

[13] CDC, Annual Report 1994, p 24.

[14] Ibid., p 23.